Are Canadian Farmers Overconfident?

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Introduction

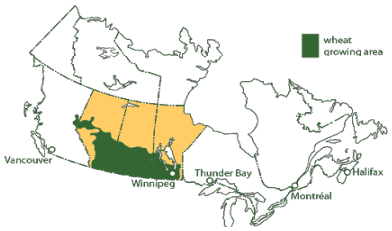
Grain marketing studies have traditionally relied on standard economic theory in which producers make decisions that are logical and out of self-interest. However, Brorsen and Anderson (2001) discuss implications of behavioural finance for agricultural marketing and indicate psychological biases which can affect marketing decisions. Further, despite the importance of marketing in farm management, it is alarming to realize that prevalent ideas about marketing decisions and performance still do not rely on a large body of evidence (Hagedorn et al. 2005).

Objective

The objective of this research is to explore:

- whether Canadian wheat producers have better information or analytical skills to outperform the market
- if they are overconfident in their ability to market their wheat.

Wheat Marketing in Canada



- All wheat produced and sold for human consumption and export in Western Canada must be marketed through Canadian Wheat Board (CWB).
- Until 2000 CWB offered only one marketing alternative to farmers−pool pricing−
  - guarantees all farmers same final price by pooling together wheat sales during crop year.
- After 2000 other pricing alternatives were developed to accommodate producers' demand for more flexibility to manage risk and cash flow
  - EPO: Early Payment Option
  - DPC: Daily Price Contract
  - BPC: Basis Price Contract
  - FPC: Fixed Price Contract
- These new contracts have distinct features but essentially allow farmers to use futures markets to price wheat.

Research Method

- Panel data model with fixed effects and robust estimators
- Performance with respect to a benchmark is the dependent variable
  - it measures "gain" or "loss" relative to benchmark

$$perf_{i,t} = price_{i,t} - benchmark_t$$

  - $price_{i,t}$ = price received by farmer i in year t
  - benchmark = historical average of futures prices
  - three benchmarks are used (12-, 20-, and 24-month historical average)

- Explanatory variables:
  - $\%EPO_{i,t}$, $\%DPC_{i,t}$, $\%FPC_{i,t}$, $\%BPC_{i,t}$ = percentage of crop priced by farmer i in year t using each type of marketing contract
  - $Month_{i,t}$ = time of year t when farmer i signed a marketing contract (variable value increases through marketing window)
  - $Active_{i,t}$ = measure of marketing activeness, indicating how much producer i varies his/her marketing strategy (Cabrini et al., 2007; Cunningham et al., 2007)

$$perf_{i,t} = \alpha + \beta_E(\%EPO)_{i,t} + \beta_D(\%DPC)_{i,t} + \beta_F(\%FPC)_{i,t} + \beta_B(\%BPC)_{i,t} + \gamma_M Month_{i,t} + \theta_A Active_{i,t} + \varepsilon_t$$

Data

- Data provided by the CWB for crop years 2003/04 through 2008/09 for all farmers growing Canada Western Red Spring (CWRS) wheat.
- Sample size of 93,339 producers that marketed their wheat using any combination of marketing contracts.
  - Alberta: 26,379 farmers; Saskatchewan: 43,455 farmers; and Manitoba: 23,505 farmers
- Final wheat price is calculated by weighted averages based on tonnes allocated to PPO contracts and pool accounts.

Table 1. Average Values

	All farmers	Alberta	Saskatchewan	Manitoba
$Performance_t$ ($/ton)				
(12-mo. benchmark)	8.789	8.67	9.82	6.99
(20-mo. benchmark)	12.27	11.77	13.78	10.03
(24-mo. benchmark)	16.37	16.25	17.68	14.07
$\%EPO_t$	10.93	8.97	11.96	11.22
$\%DPC_t$	1.50	1.46	1.27	1.98
$\%FPC_t$	10.58	12.47	9.11	11.17
$\%BPC_t$	3.07	2.32	2.52	4.92
$Month_t$	15.69	15.91	15.77	15.32
$Activeness_t$	-0.001	-0.09	0.08	-0.05

Results

- Three regression models are estimated, using different benchmarks to calculate $perf_{i,t}$
  - four equations are estimated in each model, one for the whole sample and then one for each province
- All estimated coefficients are statistically distinguishable from zero
- Percentage of grain delivered against each marketing contract (*%EPO, %DPC, %FPC, %BPC*) are all negatively related to performance, except for Saskatchewan when considering the 24-month benchmark.
  - farmers who use new marketing contracts tend to perform worse than benchmark.
- Negative relationship between *Month* and performance
  - farmers who price earlier (later) tend to perform better (worse)
- *Activeness* has negative coefficients when performance is measured against 12-month benchmark
  - greater marketing activeness leads to worse performance
- *Activeness* has positive coefficients when performance is measured against 20- and 24-month benchmarks
  - greater activeness leads to better performance

Table 2. Model with Performance based on 12-Month Benchmark ($/ton)

	All farmers	Alberta	Saskatchewan	Manitoba
Constant	72.97***	82.04***	74.25***	57.31***
%EPO	-0.46***	-0.52***	-0.55***	-0.22***
%DPC	-1.17***	-1.07***	-1.10***	-1.25***
%FPC	-1.16***	-1.23***	-1.01***	-1.28***
%BPC	-0.52***	-0.50***	-0.63***	-0.37***
Month	-2.77***	-3.25***	-2.83***	-1.94***
Activeness	-11.29***	-11.21***	-12.32***	-10.04***

Table 3. Model with Performance based on 20-Month Benchmark ($/ton)

	All farmers	Alberta	Saskatchewan	Manitoba
Constant	99.07***	108.41***	89.24***	107.66***
%EPO	-0.45***	-0.50***	-0.40***	-0.48***
%DPC	-0.68***	-0.79***	-0.54***	-0.82***
%FPC	-0.62***	-0.66***	-0.52***	-0.74***
%BPC	-0.49***	-0.56***	-0.46***	-0.50***
Month	-4.64***	-5.11***	-4.09***	-5.20***
Activeness	4.17***	3.51***	4.30***	4.14***

Table 4. Model with Performance based on 24-Month Benchmark ($/ton)

	All farmers	Alberta	Saskatchewan	Manitoba
Constant	46.08***	55.53***	34.64***	57.13***
%EPO	-0.05***	-0.11***	0.05***	-0.14***
%DPC	-0.04**	-0.20***	0.11***	-0.16***
%FPC	-0.09***	-0.13***	0.01	-0.23***
%BPC	-0.12***	-0.18***	-0.07***	-0.15***
Month	-1.77***	-2.23***	-1.16***	-2.46***
Activeness	6.96***	5.20***	8.47***	6.07***

Conclusions

- There is a negative relationship between marketing activeness and performance, suggesting farmers are overconfident in their ability to market grain
- This result only holds when performance is measured against the 12-month historical futures price
- Findings on overconfidence are sensitive to the benchmark adopted to measure performance
- Opposite results are found when 20- and 24-month historical futures price are used as benchmarks
  - farmers seem to have superior skills to market their grain when they measure performance relative to other benchmarks
- There is a negative relationship between usage of new marketing contracts and performance, suggesting farmers are not able to detect and take advantage of profit opportunities using the new marketing contracts

Further Research

- Results vary depending on the benchmark adopted to calculate performance. Therefore it is important to explore what benchmarks are relevant and perhaps consider other benchmarks (such as final CWB pool price).
- Results might be highly influenced by 2007/08, when wheat prices reached all time record highs and there was large variability in performance depending whether farmers priced wheat early in marketing window or waited to price it towards the end of marketing window.

References

Brorsen, B.W. and K.B. Anderson (2001). Implications of Behavioral Finance for Farmer Marketing Strategy Recommendation. Paper presented at the NCR-134 Conference on Applied Commodity Price Analysis, Forecasting, and Market Risk Management, St. Louis, Missouri, April 23-24, 2001.

Cabrini, S.M., S.H. Irwin, and D.L. Good (2007). Style and Performance of Agricultural Market Advisory Services. American Journal of Agricultural Economics 89:607-623.

Cunningham, L.T., W.B. Brorsen, and K.B. Anderson (2007). Cash Marketing Styles and Performance Persistence. American Journal of Agricultural Economics 89:624-636.

Hagedorn, L.A., S.H. Irwin, D.L. Good, and E.V. Colino (2005). Does the Performance of Illinois Corn and Soybean Farmers Lag the Market? American Journal of Agricultural Economics 87:1271-1279.

For further information

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